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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,063	01/17/2002	M. Nabeel Tarabishy	201-0473	3408

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EXAMINER

BEHNCKE, CHRISTINE M

ART UNIT	PAPER NUMBER
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3661

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,063

Applicant(s)

TARABISHY ET AL.

Examiner

Christine M. Behncke

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 9 and 11-18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the Amendment and Remarks filed 30 May 2003, in which claims 1-18 were presented for examination.

Claim Objections

2. Claim 9 is objected to because of the following informalities: lacking antecedent basis for "the method also comprises the step of" the independent claim 1 claims an apparatus, not a method. Appropriate correction is required.

3. Claims 11-18 are objected to because of the following informalities: lacking antecedent basis for "The method as recited in claim 1" and, claim 17, "recited in claim 7". For the purpose of compact prosecution, the Examiner assumes the claims 11-16 are meant to depend on claim 10 and claim 17 is meant to depend on claim 16. Appropriate correction is required.

4. Claim 18 is further objected to because of the following informalities: a second period at the end of claim should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(f) he did not himself invent the subject matter sought to be patented.

6. Claims 1-18 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter. In the European patent application No. 01116303.7,

filed 5 July 2001 inventors Jansson and Johansson (further referred to as Jansson et al.) discloses the method for avoiding a vehicle collision (abstract).

7. Further Jansson et al. discloses a method comprising the steps of: generating a forward-looking signal corresponding to a relative position between a host vehicle and a target object ([0004]); generating a yaw rate signal corresponding to the angular position of a vehicle at several future occasions ([0029]); predicting the probability density function for the position of a vehicle at several future occasions ([0025] and claim 1); predicting the probability density function for the position of said additional object at several future occasions ([0025]-[0026] and claim 1); forming the joint probability density function for the relative positions of the vehicle and object at said several future occasions ([0016] and claim 1); and integrating the joint probability density function over the area in which the vehicle upon said forward-looking signal and said yaw rate signal ([0017] and claim 1).

8. Further Jansson et al. discloses wherein said object is a vehicle ([0024] and claim 2); said object is a fixed object ([0020] and claim 3); the probability density function is predicted for several vehicle, fixed objects and moving objects ([0021] and claim 4); said forward-looking signal corresponds to the total width and length of the vehicle and object ([0031] and claim 5); said probability density function is approximated with the Gaussian normal distribution ([0014] and claim 6); the probability density function is calculated using the Kalman filter ([0030] and claim 7); the Kalman filter is used to calculate the covariance matrix of the vehicle and the object ([0029] and claim

8); and also comprises the step of taking a suitable cause of action for the specific situation ([0018] and claim 9).

9. Regarding claims 1-9, it would be inherent and obvious to use a forward-looking sensor to generate the forward-looking signal, a yaw rate sensor to generate the yaw rate signal, and a controller electrically coupled to the forward-looking and yaw rate sensors and contain the control logic that would be operative to implement the method disclosed by Jansson et al.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 9, 10, 11 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishida et al. US Patent No. 5,572,428.

11. **(Claims 1 and 10)** Ishida et al. discloses an apparatus and method for avoiding vehicle collisions (abstract) comprising: a forward-looking sensor generating a forward-looking signal corresponding to a relative position between a host vehicle and a target object (figure 1 and Column 4, lines 61-67); a yaw rate sensor generating a yaw rate signal corresponding to the angular position of said host vehicle relative to said target object (figure 1 and Column 4, line 66-Column 5, line 3); a controller electrically coupled to said forward-looking sensor and said yaw rate sensor, said controller receiving said

forward-looking signal and said yaw rate signal (collision-determining section, figure 1), said controller including control logic operative to predict the probability density function for the position of a vehicle at several future occasions (figure 15 and Column 10, lines 30-39 over time period T(1) to T(n)), predict the probability density function for the position of said additional object at several future occasions (figure 17, the probability density function in the "Estimated Direction of Object" over time period T(1)-T(n), and Column 10-43-49), form the joint probability density function for the relative positions of the vehicle and the object at said several future occasions (figures 18 and 19 over time period T(1)-T(n), and Column 12, lines 1-5), and integrate the joint probability density function (integrating the joint or added probability functions of both objects results in the probability of both objects occupying the same space) over the area in which the vehicle and the object are in physical conflict (figure 18 and 19a-d, Column 10, lines 50-64) based upon said forward-looking signal and said yaw rate signal.

12. **(Claims 2 and 11)** Ishida et al. further discloses wherein said target object is a vehicle (Column 1, lines 7-10).

13. **(Claims 9 and 18)** Ishida et al. further discloses wherein a suitable cause of action for the specific situation is also decided (figure 2 and Column 9, lines 34-36).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. in view of Wang et al. US Patent No. 5,613,039.

(Claims 3 and 12) Ishida et al. discloses the method and apparatus previously discussed but fails to disclose that the object is fixed or several vehicles, fixed objects or moving objects. However, Wang et al. teaches a collision avoidance apparatus and method wherein the object is a fixed object (Column 3, lines 26-29),

(Claims 4 and 13) Wang further teaches wherein the probability density function is predicted for several vehicles, fixed objects, and moving objects (abstract, Column 12, lines 35-41 and Column 13, lines 3-13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus and method of Ishida et al. with the teachings of Wang et al. because it would have increased the effectiveness and safety of the collision avoidance system to include stationary and plural objects.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. in view of Wang and in further view of Cong, US Patent No. 6,420,997.

16. Ishida et al. in view of Wang discloses the apparatus and method previously discussed but does not disclose a Gaussian normal distribution. However, Cong does teach wherein said probability density function is approximated with the Gaussian normal distribution (Column 8, lines 10-11 and lines 31-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method and apparatus of Ishida et al. with the teachings of Cong because Cong demonstrates that using Gaussian normal distribution to approximate the probability density function is a common practice and an effective control tool.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida et al. in view of Farmer et al. US Patent No. 6,085,151.

18. Ishida et al. discloses the probability density function as discussed previously but does not disclose the use of a Kalman filter. However, Farmer et al. does teach a probability density function is calculated using the Kalman filter (Column 11, lines 37-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method and apparatus of Ishida et al. with the teachings of

Farmer et al. because the Kalman filter makes the most effective use of inaccurate or uncertain data that exists in an anti-collision system.

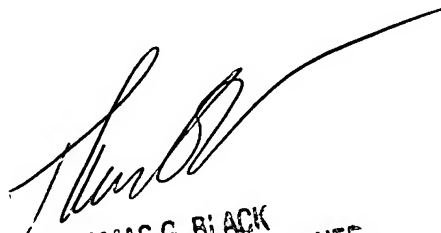
Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine M. Behncke whose telephone number is (703) 305-0589. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (703) 305-8233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

02-22-2005


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